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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,048	09/11/2003	Louis D. Lanzerotti	BUR920010146US2	7268
29154	7590	11/17/2005	EXAMINER	
FREDERICK W. GIBB, III GIBB INTELLECTUAL PROPERTY LAW FIRM, LLC 2568-A RIVA ROAD SUITE 304 ANNAPOLIS, MD 21401			QUACH, TUAN N	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/660,048

Applicant(s)

LANZEROTTI ET AL.

Examiner

Tuan Quach

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-13 and 32-43 is/are pending in the application.
- 4a) Of the above claim(s) 32-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 9-13 are elected without traverse. Claims 20-31 are cancelled. Applicant submitted new claims 32-43 which recites similar structures in claims 20-31, including the single crystalline region and the polycrystalline region, improved electrostatic discharge protection of the bipolar transistor, increased speed and control breakdown voltage of the bipolar transistor, e.g., claim 32 lines 3-5, the last two lines, claim 38, lines 3-5, the last two lines, thus would correspond to and grouped together with species 2, page 2 third paragraph of Paper 0805. Accordingly, claims 20-31 are withdrawn from consideration in view of applicant's election of claims 9-13, corresponding to species 1 in Paper 0805 above. Applicant argues that the preamble of semiconductor for use in bipolar transistor making these claims correspond to species 1 is unpersuasive in view of the recitation of corresponding structure regions delineated above and in view of the recited improved characteristics delineated above regarding the bipolar.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 9-13 are rejected under 35 U.S.C. 102(b or e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lippert et al. (either WO 98/26457 or 6,750,484, respectively).

Initially, the two Lippert documents are equivalents, as U.S. Pat. 6,750,484 corresponds to a division of 09/319,699 filed as application of PCT/DE02908 which is WO 98/26457). Subsequent referencing will refer to the U.S. patent which is in the English language.

Lippert et al. (6,750,484) teaches carbon atoms, dopant interacting with carbon atoms, the carbon atoms limit outdiffusion of the dopant in semiconductor base layer 3 and to reduce the outdiffusion region 5. See column 3 line 50 to column 4 line 11.

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Regarding claim 10, this would have been anticipated given the overlapping range, wherein the dopant, e.g., boron concentration between $5 \times 10^{18} \text{ cm}^{-3}$ and 10^{21} cm^{-3} . See column 3 line 50 to column 4 line 40. See the corresponding description in '457. The resistance less than 4 K ohms/cm² would be inherent or otherwise obvious given the teachings of Lippert et al., although the Office is not equipped to make the measurement as to the resistance of the layer, such would have been inherently met given the or otherwise obvious.

Note that the "semiconductor" as in preamble of claim 9 and at line 4 corresponds to the total semiconductor structure in Lippert et al. wherein the doped region corresponds to region 32 that comprises less than all of the entire semiconductor structure which comprises carbon atoms in region 2 of the semiconductor, the region 2 serves to limit the size of doped region 3 and 5. See Fig. 1, column 3 lines 64 et seq.

While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard

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Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).

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The express, implicit, and inherent disclosures of a prior art reference may be relied upon in the rejection of claims under 35 U.S.C. 102 or 103. "The inherent teaching of a prior art reference, a question of fact, arises both in the context of anticipation and obviousness." In re Napier, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995) (affirmed a 35 U.S.C. 103 rejection based in part on inherent disclosure in one of the references). See also In re Grasselli, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed. Cir. 1983).

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but

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the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection. "There is nothing inconsistent in concurrent rejections for obviousness under 35 U.S.C. 103 and for anticipation under 35 U.S.C. 102." *In re Best*, 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977). This same rationale should also apply to product, apparatus, and process claims claimed in terms of function, property or characteristic. Therefore, a 35 U.S.C. 102/103 rejection is appropriate for these types of claims as well as for composition claims.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted) (The claims were drawn to a disposable diaper having three fastening elements. The reference disclosed two fastening elements that could perform the same function as the three fastening elements in the claims. The

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court construed the claims to require three separate elements and held that the reference did not disclose a separate third fastening element, either expressly or inherently.).

Alternatively, it would have been obvious to one skilled in the art to have optimized the characteristics given the teachings of Lippert et al., column 2 lines 56-62, including the reduce the resistance of the base, the same objective obtained by applicant.

Regarding claim 10, the dopant concentration would have been met or otherwise obvious given the overlapping range delineated above.

Regarding claim 11, the use of dopant is anticipated and obvious as delineated above.

Regarding claim 12, the use of semiconductor comprising silicon germanium is anticipated, column 2 line 42.

Regarding claim 13, such functional regarding a central portion would have been met upon the doping employed given the same doping is employed in Lippert et al.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lippert et al. as applied to claims 9-13 above, and further in view of Sakamoto and Bisaro et al.

The reference as applied above teaches the same dopant of boron in the instant specification but does not enumerate the remaining dopants, e.g., aluminum, gallium, indium, and titanium.

Sakamoto 5,750,443 teaches column 3 lines 40-43 the conventional p type dopants including boron, gallium or aluminum or the like. Bisaro et al. 5,141,894 also

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teaches the various suitable dopants including boron, gallium, titanium, indium, etc.

See column 3 lines 35-43.

It would have been obvious to one skilled in the art in practicing the above invention to have employed the conventional dopants as delineated in Sakamoto and Bisaro et al. since such correspond to conventional dopants as evidenced by Sakamoto and Bisaro et al. Official notice is alternatively given regarding the use of any suitable conventional dopants in place of boron enumerated above.

Applicant's arguments filed September 7, 2005 and May 31, 2005 have been fully considered but they are not persuasive.

Initially, regarding arguments regarding new claims 32-43, see the reasons delineated regarding the single crystalline region and polycrystalline region and the characteristics regarding the bipolar device claimed in these claims as delineated above.

Regarding the remarks in the response filed May 31, 2005, regarding claims 9-13 see the new grounds of rejection delineated above.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Quach whose telephone number is (571) 272-1717. The examiner can normally be reached on M - F from 8:30 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1562.



Tuan Quach
Primary Examiner